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ABSTRACT

Fifty-six subjects were treated in an eight-week program including social learning, behavioral, cognitive, and assertiveness training procedures aimed at the alleviation of depression. Therapist contact, a cost-effectiveness variable, was varied across four treatment groups: individual therapy, small group, large group, and bibliotherapy. Regression analyses were done to see if prognostic indicators were present in the intake variables. When the average depression score at intake was added to the list of independent variables, it became the best predictor of outcome at post-therapy, and also at follow-up. Results indicated that the multimodal treatment was effective when compared to the waiting-list control group, and that the amount of therapist contact did not have a differential effect on therapeutic gains. (Author/LS)

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Amount of Therapist Contact and Outcome for a
Multimodal Depression Treatment Program

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Running head: Multimodal Depression Treatment

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The availability of the depression program was publicized via newspaper articles and radio announcements containing a phone number for the program. Intake interviews were conducted on a first call - first serve basis. During the intake interview, the potential client was administered the Beck Depression Inventory, briefly described his problems, was given a detailed description of the program and the areas which would be covered, and was told of the assessment requirements and deposit (\$25.00 refundable upon completion of the program) which would be expected of him. Participation in the program required (1) a Beck score greater than 9, (2) interviewer's impression that the potential client suffered primarily depressive symptoms with no formal thought disorder, (3) interest of the potential client in participation, and (4) willingness of the potential client to meet program assessment requirements. Upon completion of the approximately 1½ hour intake interview, the potential client was told whether he was "in" or "out." Very few interviewees were turned away or were not interested in participating (less than 10).

Clients were then scheduled to come in individually for 2½ hours to complete the initial assessment package, consisting of the Life Changes Scale, the Rotter LC, an MMPI, Trailmaking A and B, a DACL form E, Beck Hopelessness Scale, Zung Depression Scale, and a Profile of Mood States. The client gave the examiner his deposit and was informed as to his group assignment. Prior to this, neither the client or the examiner knew which treatment he would receive.

Three first year graduate students were therapists. Each took four individuals and one group. All therapists had training in active listening skills and in the treatment materials prior to the program beginning. Subjects were randomly assigned to treatment condition, and to therapist in the individual and small group conditions. The program ran for eight weeks for all conditions simultaneously, with 1½ hour weekly sessions for non-bibliotherapy clients. I met with the bibliotherapy group once during the first week of the program to explain the materials and how to use them, and to give a pep talk ("You can do this, it can work for you, etc"). Most of these clients were very skeptical. Also, I was told by the examiners that when the clients were told of their group assignment, bibliotherapy clients were generally more upset than even waiting list clients.

The Individual Therapy condition consisted of twelve clients who met individually with a therapist once a week. The small group condition consisted of two groups, one having five and the other having six members, also meeting once a week with a single therapist. The large group was composed of eleven clients and one therapist who met once a week also. All therapists oriented their activities around a skills teaching approach. The clients in all treatment conditions were predominately female (47 vs. nine males).

A one-way ANOVA was done on each intake variable, with none showing significance across treatment conditions. The variables were: Sex, age, living arrangements, marital status, number of times married, number of people in household, number of jobs in past year, number of jobs in past five years, SES, education, certainty for success in program (self-rated from 0 to 100%), Life Changes Scale for the past six months, Life Changes Scale for the past

two years, Rotter LC, Rotter LC personal control factor, standard MMPI Scales, Barron Ego Strength, Beck Depression Inventory, Trailmaking A and B, DACL form E, Beck Hopelessness Scale, Zung Self-Rated Depression Scale, and Profile of Mood States standard scales. Assessment was also done the week following the end of the program and two months later. The waiting list control group received treatment in two small groups during the period between the post-therapy assessment for the other groups and the follow-up assessment. The measures given at these times were: Beck Depression Scale, Trailmaking A and B, DACL form E, Beck Hopelessness Scale, Zung Self-Rated Depression Scale, Profile of Mood States, and MMPI D scale.

To simplify the analysis of the outcome data, we planned to extract a principle component from the Depression measures (the two Beck scales, the Zung, the MMPI D scale, and the POMS depression scale) at intake and use this component as the dependent measure. The principle component derived accounted for 59.3% of the variance, but the factor score coefficients were quite similar, ranging from .198 to .250 (Table 1). We decided that a simple average of the dependent measures would be a preferable dependent measure in terms of interpretability, and found that the average of the six variables accounted for 58.5% of the variance. Since the average score accounted for about the same amount of variance as the principle component, we decided to use it.

Using the average depression measure, a repeated measures analysis of variance was done for the Individual, Small Group, Large Group, and Bibliotherapy subjects at intake, post therapy, and follow-up. A significant effect across time was found ($F(2,76) = 73.8, p < .001$) but no

significance was found across treatments ($F(3,38) = 2.17, p = .107$). A one-way ANOVA was done on the Individual, Small Group, Large Group, Bibliotherapy, and Waiting List subjects at intake with no significance ($F(4,51) = 1.21, p < .318$), and at post therapy showing significant differences ($F(4,51) = 6.98, p < .001$). The linear contrast of the waiting list group with the treatment groups was significant at the .001 level, while the contrast of Bibliotherapy with other therapies was not significant ($p = .45$).

Regression analyses were done to see if prognostic indicators were present in the intake variables. Using the average depression score at post therapy as the dependent measure and Age, Number of members of household, SES, Barron Ego Strength Education, Certainty of succeeding in the program, Life Changes in the past 2 years, Rotter LC, and Trailmaking B as the independent variables, a regression was done with all subjects. Using an F to enter criterion of 1, it was found that successful subjects tended to be high on Ego Strength, Certainty of success, Education, Life Changes score and low on SES, age, and Rotter LC, with number of people in household and trailmaking scores not reaching criterion (Table 8). Using the same independent variables and average depression score at follow-up as the dependent measure, it was found that subjects who maintained gains tended to score high on Ego strength, number of people in household, and certainty of success, and low on Rotter LC and age, with the other variables not meeting criterion. These results are shown in Table 9. When the average depression score at intake was added to the list of independent variables, it became the best predictor of outcome at post therapy (Table 10), and also at follow-up. However, the average depression score at post therapy was a better predictor of follow-up score, so it results in a better regression (Table 11).

It was also interesting to see if MMPI subscales could predict outcome, but to regress these scores on the average depression measure would result in a spurious correlation, as the average depression score is in part made of the MMPI D score, which has item overlap with other MMPI scales. Therefore the Zung Self-Rated Depression Scale was used as the dependent measure, as it was the most highly correlated scale with the average depression measure, which I interpret as meaning it is the "best" single depression measure. Regressions of MMPI scales on Zung scores at post therapy and follow-up are shown in Tables 12 and 13, respectively.

The Zung score was also used as the dependent measure for regressions of Profile of Mood States Scales (Table 14) and Beck Hopelessness and Harris-Lingoes MMPI D Scale Factors (Table 15). These regressions were repeated at Follow-up (Tables 16 and 17), and at Follow-up using post therapy scores (Tables 18 and 19).

Table 1. Correlations of depression measures with principle component and simple average scores.

SCALE	FACTOR LOADING	CORR. W/AVG.
Beck Depression Inventory	.7028	.6899
Zung Self-Rated Depression Scale	.8907	.8909
Beck Hopelessness Scale	.7328	.6972
DACL Form E	.7358	.7235
Profile of Mood States Depression	.7594	.8116
MMPI D Scale	.7832	.7577

Table 2. Average depression score at intake, post therapy, and followup.

TREATMENT GROUP		INTAKE	POST THERAPY	FOLLOWUP
Individual	Mean	25.78	15.71	16.09
	S.D.	7.30	6.28	6.06
	n	12	12	11
Small Group	Mean	28.30	18.91	17.15
	S.D.	6.30	5.84	4.09
	n	11	11	10
Large Group	Mean	30.56	24.09	21.85
	S.D.	3.54	7.73	7.79
	n	11	11	10
Bibliotherapy	Mean	29.35	17.70	18.12
	S.D.	6.22	6.35	8.78
	n	12	12	11
Waiting List	Mean	30.72	30.05	20.67
	S.D.	7.09	9.48	9.39
	n	10	10	9

Table 3. Distribution of changes in average depression score from intake to post therapy.

TREATMENT	IMPROVED*			No Change	WORSE		
	3 SD	2 SD	1 SD		1 SD	2 SD	3 SD
Individual	0	3	8	1	0	0	0
Small Group	0	5	2	4	0	0	0
Large Group	0	4	2	5	0	0	0
Bibliotherapy	1	4	5	1	0	0	0
Total Treatment	1	16	17	11	0	0	0
Waiting List	0	0	1	8	1	0	0

*

The Standard Deviation used is that computed at intake for the average depression score (6.255).

Table 4. Distribution of changes in average depression scores from post therapy to follow up.

TREATMENT	IMPROVED			No Change	WORSE		
	3 SD	2 SD	1 SD		1 SD	2 SD	3 SD
Individual	0	0	1	10	0	0	0
Small Group	0	0	2	7	1	0	0
Large Group	0	1	3	5	1	0	0
Bibliotherapy	0	0	0	10	1	0	0
Total Treatment	0	1	6	32	3	0	0

Table 5. Distribution of Beck Depression Inventory scores at intake.

TREATMENT	BECK RANGE*			
	None	Mild	Moderate	Severe
Individual	0	2	6	4
Small Group	0	1	3	7
Large Group	0	0	5	6
Bibliotherapy	0	1	6	5
Total Treatment	0	4	20	22
Waiting List	0	0	5	5

* None=0 - 9. Mild= 10-15, Moderate=16 - 23, Severe= 24 - 63.

Table 6. Distribution of Beck Depression Inventory scores at post therapy.

TREATMENT	BECK RANGE			
	None	Mild	Moderate	Severe
Individual	8	2	2	0
Small Group	7	1	2	1
Large Group	2	4	3	2
Bibliotherapy	8	2	2	0
Total Treatment	25	9	9	3
Waiting List	0	4	1	5

Table 7. Distribution of Beck Depression Inventory scores at follow up.

TREATMENT	BECK RANGE			
	None	Mild	Moderate	Severe
Individual	6	2	4	0
Small Group	8	2	0	1
Large Group	4	5	1	1
Bibliotherapy	7	2	3	0
Total Treatment	25	11	88	2

Table 8. Regression of selected variables on average depression score at post therapy.

R Square = .498	Adjusted R Square = .402	ANOVA F (7,37) = 5.23
VARIABLE	BETA	F
Barron Ego Strength	-.142	19.14
Certainty of Success	-.273	4.25
Education	-.413	6.86
Life Changes in 2 Years	-.207	2.48
SES	.292	4.28
Age	.195	2.14
Rotter LC	.173	1.89

Not entered: Number of people in Household, Trailmaking B.

Table 9. Regression of selected variables on average depression score at follow up.

R Square = .607	Adjusted R Square = .551	ANOVA F (5,35) = 10.83
VARIABLE	BETA	F
Barron Ego Strength	-.520	23.06
Number of people in Household	-.381	11.35
Certainty of Success	-.248	4.85
Rotter LC	.228	3.67
Age	.108	1.01

Not entered: SES, education, life changes in 2 years, Trailmaking B.

Table 10. Regression of selected variables including average depression score at intake on average depression score at post therapy.

R Square = .529	Adjusted R Square = .440	ANOVA F (7,37) = 5.94
VARIABLE	BETA	F
Average depression score at intake	.337	4.52
Certainty of success	-.269	4.64
SES	.268	3.92
Barron Ego Strength	-.362	3.87
Life changes in 2 years	-.188	2.19
Education	-.273	2.85
Age	.138	1.31

Not entered: Number of people in household, Rotter LC, Trailmaking B.

Table 11. Regression of selected variables including average depression at post therapy on average depression score at follow up.

R Square = .780	Adjusted R Square = .725	ANOVA F (8,32) = 14.16
VARIABLE	BETA	F
Average depression at post therapy	.566	24.83
Number of people in household	-.344	14.52
Barron Ego Strength	-.393	10.78
Rotter LC	.146	2.35
Average depression at intake	-.170	1.90
Certainty of success	-.132	1.81
Trailmaking B	-.152	1.97
Age	.096	1.00

Not entered: SES, education, life changes in 2 years.

Table 12. Regression of MMPI subscale scores on Zung score at post therapy.

R Square = .341 Adjusted R Square = .256 ANOVA F (5,39) = 4.03		
VARIABLE	BETA	F
F Scale	.387	6.66
Hy Scale	.347	5.61
Ma Scale	-.272	3.57
K Scale	-.206	2.16
Mf Scale	-.140	1.09

Table 13. Regression of MMPI subscales on Zung score at follow up.

R Square = .411 Adjusted R Square = .366 ANOVA F (3,39) = 9.09		
VARIABLE	BETA	F
Pa Scale	.239	2.21
F Scale	.303	4.38
Hy Scale	.272	3.67

Table 14. Regression of Profile of Mood States scales at intake on Zung scores at follow up.

R Square = .267 Adjusted R Square = .232 ANOVA F (2,42) = 7.63		
VARIABLE	BETA	F
Tension - Anxiety	.404	9.34
Vigor	-.313	5.59
Not entered: Confusion, Depression, Fatigue, Anger-Hostility.		

Table 15. Regression of MMPI D scale factors and Beck Hopelessness Scale factors at intake on Zung scores at post therapy.

R Square = .266	Adjusted R Square = .230	ANOVA F (2,41) = 7.43
VARIABLE	BETA	F
BHS Factor II - Loss of Motivation	.442	10.68
Harris-Lingoes III - Physical Malfunction	.206	2.32
Not entered: Harris-Lingoes factors I - Subjective Depression, II - Psycho- motor Retardation, IV - Mental Dullness, and V - Brooding. Beck Hopelessness Scale factors I - Feeling About the Future and III - Future Expectations.		

Table 16. Regression of Profile of Mood States scales at intake on Zung scores at follow up.

R Square = .320	Adjusted R Square = .268	ANOVA F (3,39) = 6.15
VARIABLE	BETA	F
Depression	.488	6.56
Confusion	.209	1.41
Fatigue	-.167	1.08
Not entered: Tension-Anxiety, Vigor and Anger-Hostility.		

Table 17. Regression of MMPI D Scale factors and Beck Hopelessness Scale factors at intake on Zung scores at follow up.

R Square = .441	Adjusted R Square = .364	ANOVA F (5,36) = 5.69
VARIABLE	BETA	F
Harris-Lingoes I - Subjective Depression	.629	4.98
BHS FACTOR I - Feeling About Future	.418	8.52
Harris-Lingoes III-Physical Malfunction	.272	3.44
Harris-Lingoes IV- Mental Dullness	-.370	1.84
Harris-Lingoes II- Psychomotor Ret.	-.171	1.37
Not entered: Harris-Lingoes factor V - Brooding. Beck Hopelessness Scale factors II - Loss of Motivation and III - Future Expectations.		

Table 18. Regression of Profile of Mood States scales at post therapy on Zung scores at follow up.

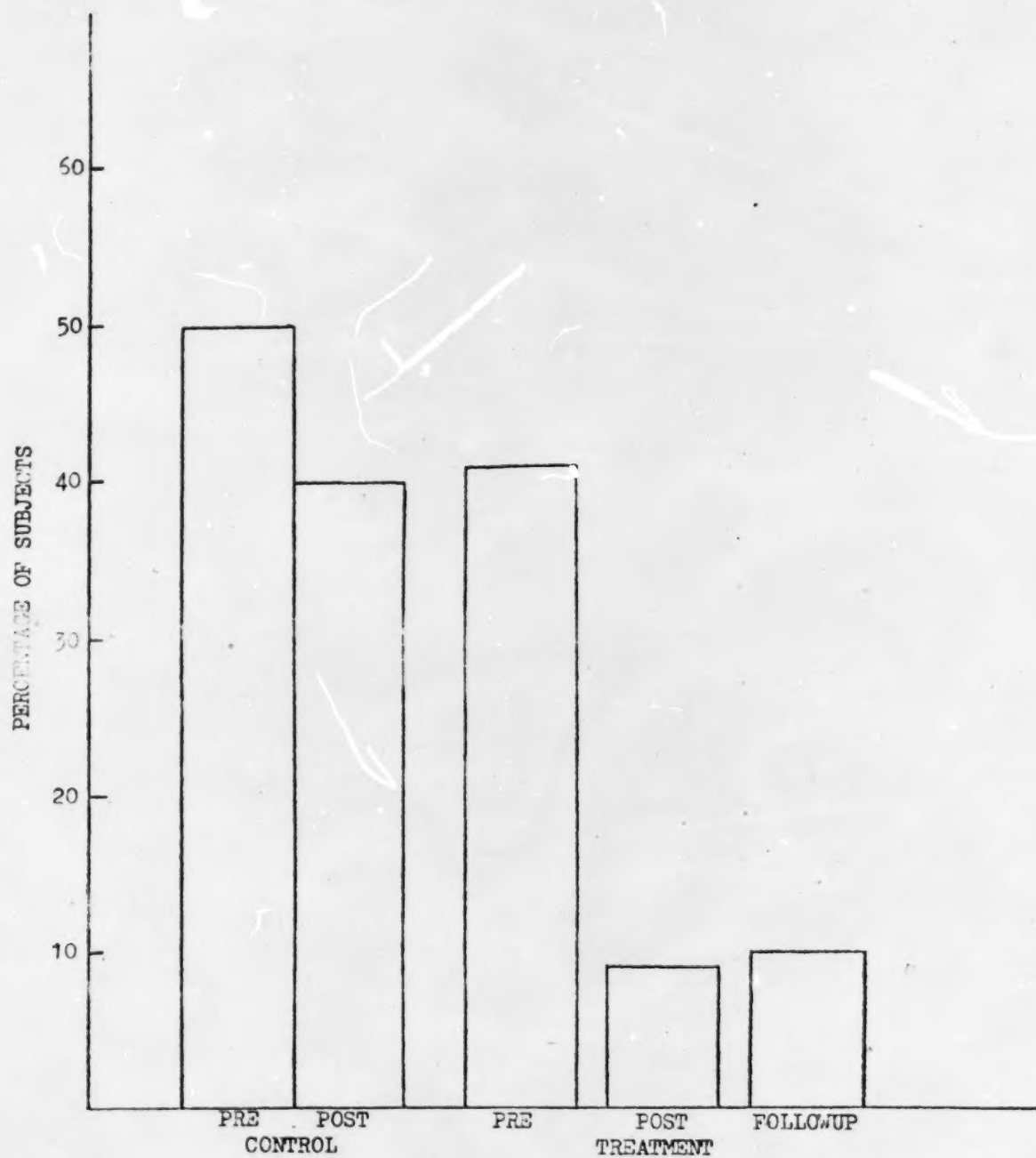
R Square = .517	Adjusted R Square = .478	ANOVA F (3,38) = 13.53
VARIABLE	BETA	F
Depression	.296	3.40
Vigor	-.350	7.27
Anger-Hostility	.245	2.81

Not entered: Confusion, Tension-Anxiety and Fatigue.

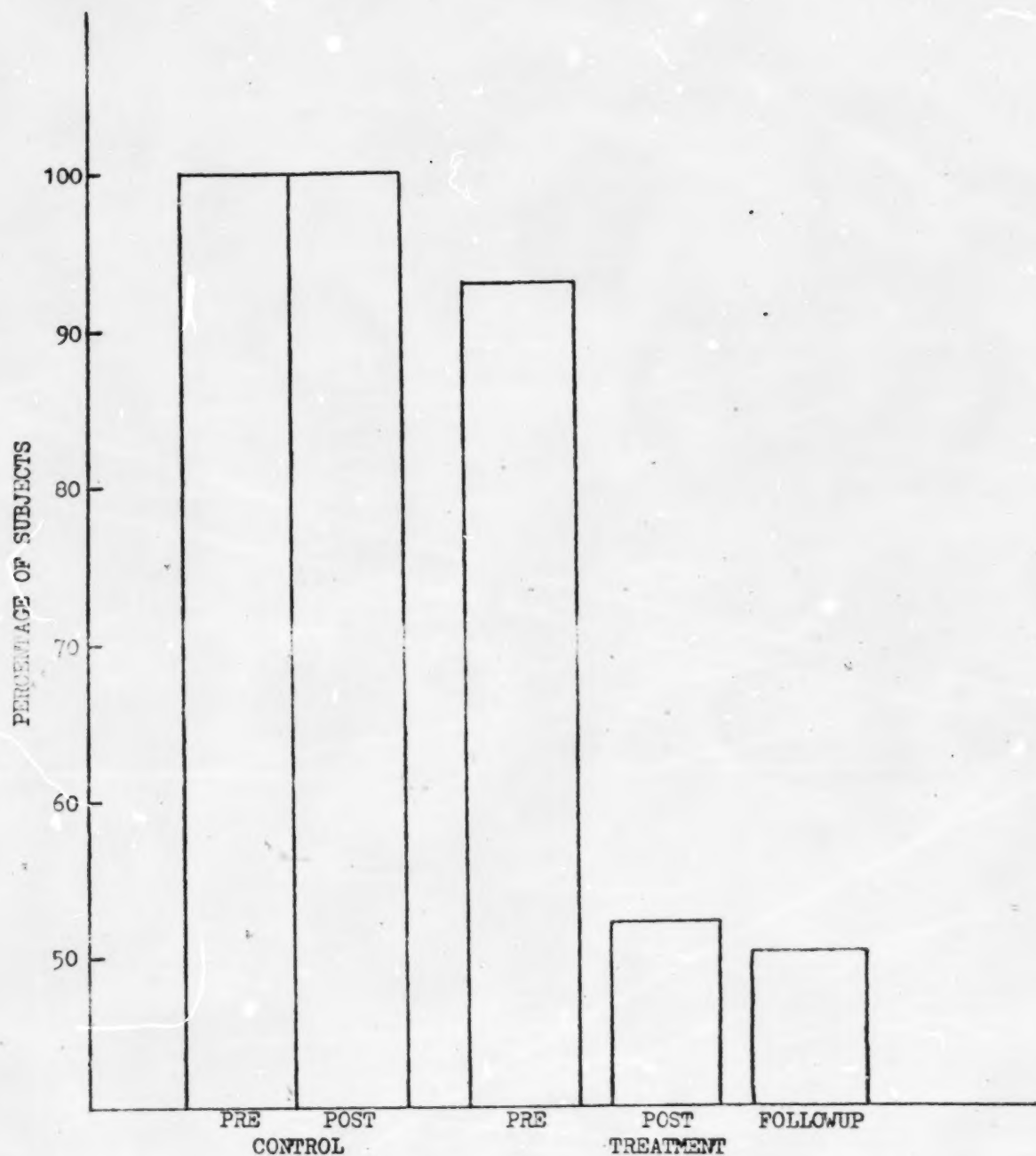
Table 19. Regression of MMPI D Scale factors and Beck Hopelessness Scale factors at post therapy on Zung scores at follow up.

R Square = .639	Adjusted R Square = .597	ANOVA F (4,35) = 15.47
VARIABLE	BETA	F
Harris-Lingoes V-Brooding	.563	17.12
Harris-Lingoes III- Physical Malfunction	.299	6.31
BHS Factor II - Loss of Motivation	.277	3.49
BHS Factor III - Future Expectations	-.208	1.74

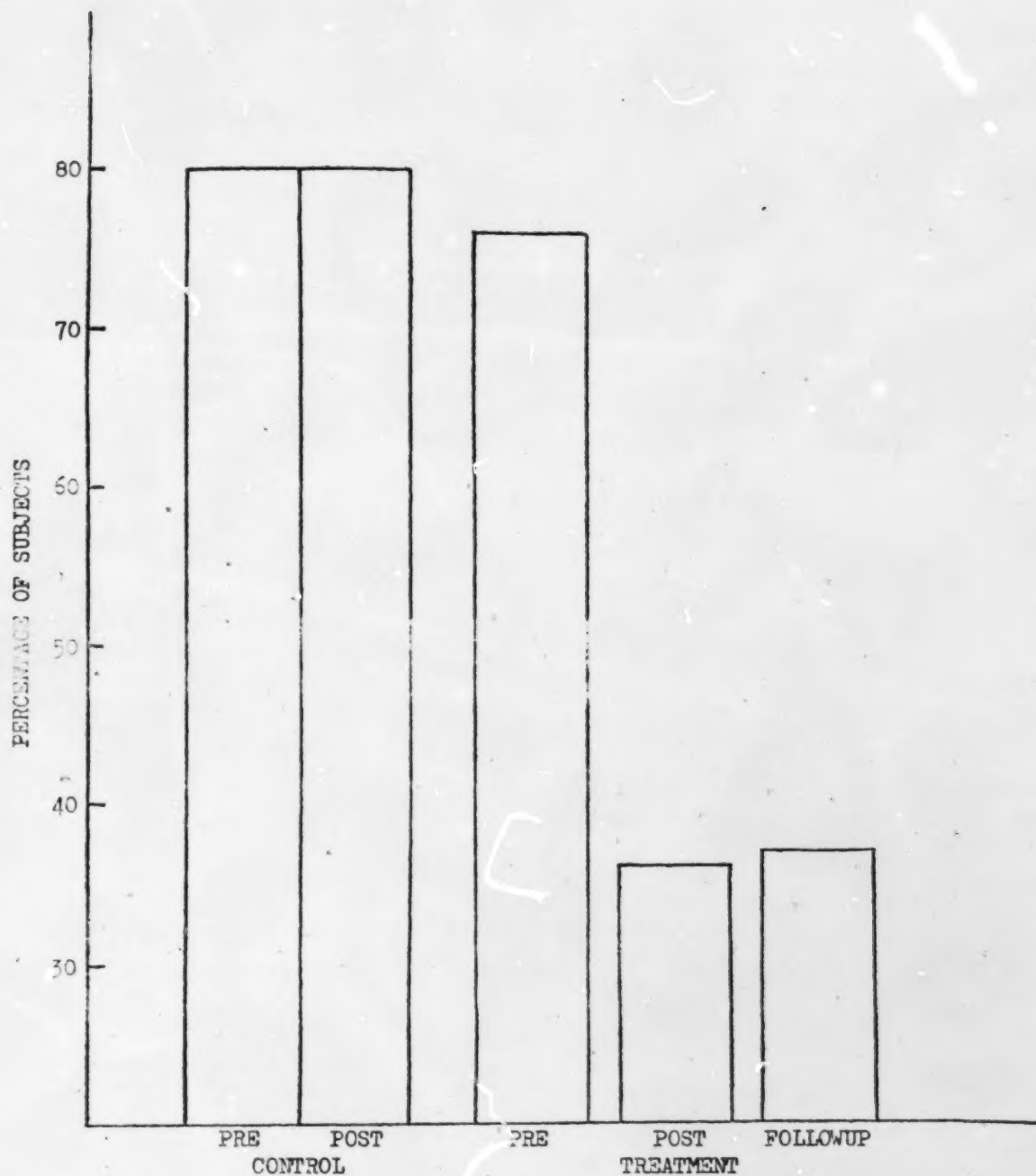
Not entered: Harris-Lingoes factors I - Subjective Depression, II - Psycho-motor Retardation, and IV - Mental Dullness. Beck Hopelessness Factor I - Feeling About the Future.



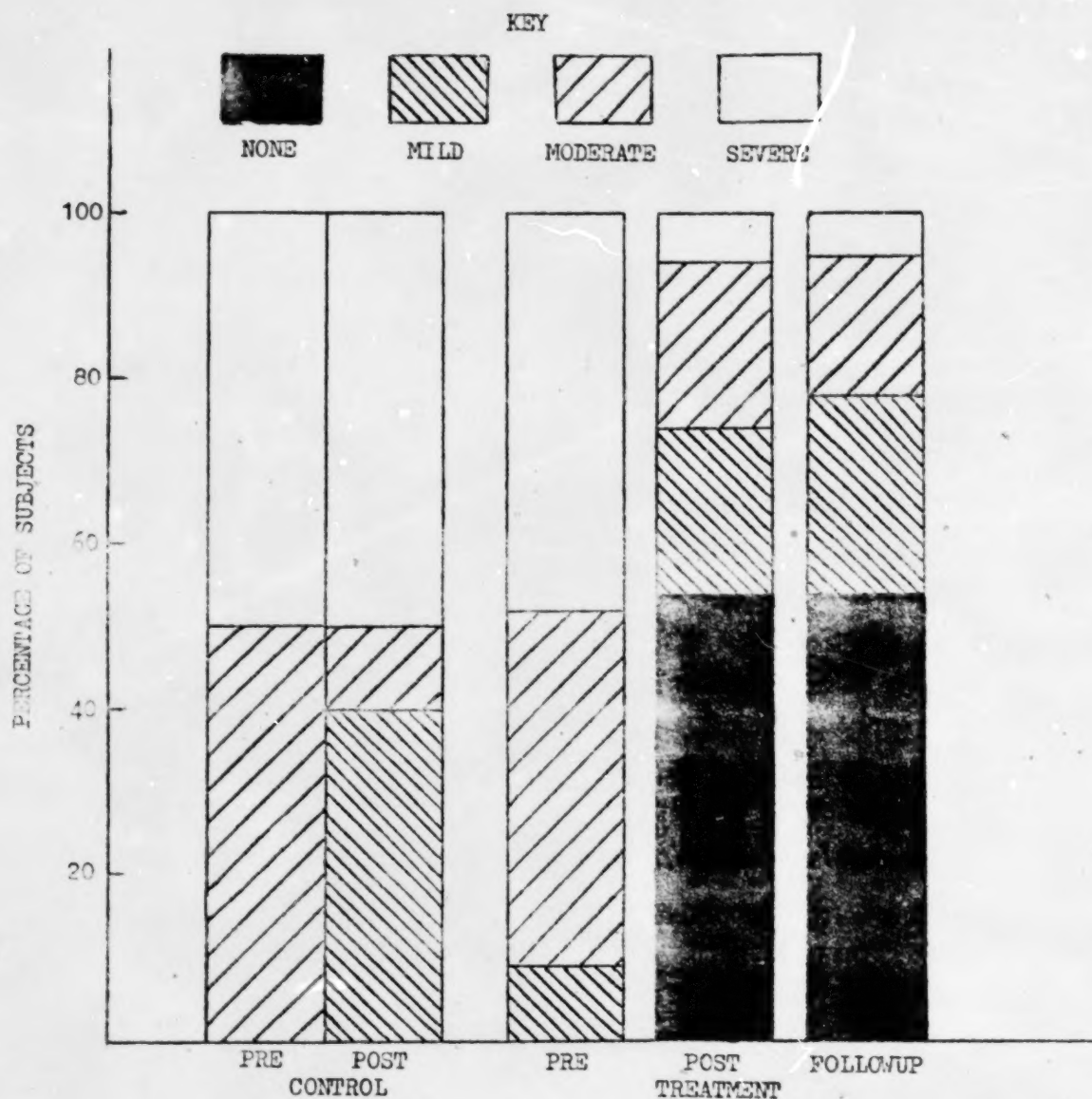
Percentage of subjects falling into the depressed range (≥ 17) on the DACL Form E before treatment (PRE), following treatment (POST) and at followup.



Percentage of subjects falling into the depressed range (≥ 46.5) on the Zung Self Rating Depression Scale before treatment (PRE), following treatment (POST) and at followup.



Percentage of subjects falling into the depressed range ($T\text{-Score} \geq 70$) on the MMPI D scale before treatment (PRE), following treatment (POST) and at followup.



Percentage of subjects falling into the None (0 - 9), Mild (10 - 15), Moderate (16 - 23), and Severe (24 - 63) ranges on the Beck Depression Inventory before treatment (PRE), following treatment (POST) and at followup.